

CLAIMS

1. An electronic component device comprising:

a rectangular plate-shaped element including a front face, a reverse face, a functional part provided on the front face, and a first frame-shaped electrode surrounding the functional part, wherein the coefficient of linear expansion in the x direction along a side of the rectangle is different from the coefficient of linear expansion in the y direction orthogonal to the x direction in the rectangular plane;

a substrate including a front face, a reverse face, and a second frame-shaped electrode provided on the front face at a position corresponding to the first frame-shaped electrode; and

a solder sealing frame provided on the surface of at least one of the first frame-shaped electrode and the second frame-shaped electrode,

wherein each of the first frame-shaped electrode, the second frame-shaped electrode, and the solder sealing frame includes a strip-shaped part extending in the x direction and a strip-shaped part extending in the y direction,

the element and the substrate are bonded with the solder sealing frame, the functional part provided on the front face of the element is hermetically sealed in a space formed between the element and the substrate, and

when the difference in expansion in the x direction between the element and the substrate is represented by Q_x and the difference in expansion in the y direction between the element and the substrate is represented by Q_y , in each of the first frame-shaped electrode, the second frame-shaped electrode, and the solder sealing frame, the width of the strip-shaped part

extending in the direction in which the larger difference in expansion is generated between the differences Q_x and Q_y in expansion is smaller than the width of the strip-shaped part extending in the direction in which the smaller difference in expansion is generated between the differences Q_x and Q_y in expansion.

2. The electronic component device according to claim 1, wherein the thickness of the solder sealing frame is 18 μm or more.

3. The electronic component device according to claim 1 or claim 2, wherein when the coefficient of linear expansion in the x direction of the substrate is represented by A_x , the coefficient of linear expansion in the y direction of the substrate is represented by A_y , the coefficient of linear expansion in the x direction of the element is represented by B_x , the coefficient of linear expansion in the y direction of the element is represented by B_y , the length of the external side of the strip-shaped part extending in the x direction of the first and second frame-shaped electrodes is represented by dl_x , the length of the external side of the strip-shaped part extending in the y direction of the first and second frame-shaped electrodes is represented by dl_y , the difference Q_x in expansion is represented by $Q_x = |A_x - B_x| \times dl_x$ ($\text{mm}/^\circ\text{C}$), and the difference Q_y in expansion is represented by $Q_y = |A_y - B_y| \times dl_y$ ($\text{mm}/^\circ\text{C}$), the larger difference in expansion between the differences Q_x and Q_y in expansion is 2.2×10^{-5} ($\text{mm}/^\circ\text{C}$) or less.

4. The electronic component device according to any one of claims 1 to 3, wherein when the ratio of flexural rigidity in the x direction between the element and the substrate is

represented by R_x and the ratio of flexural rigidity in the y direction between the element and the substrate is represented by R_y , the larger ratio of flexural rigidity between the ratios R_x and R_y of flexural rigidity is 1.2 or less.

5. The electronic component device according to any one of claims 1 to 4, wherein the element is a surface acoustic wave element.